Elkhorn Slough Tidal Wetland Plan

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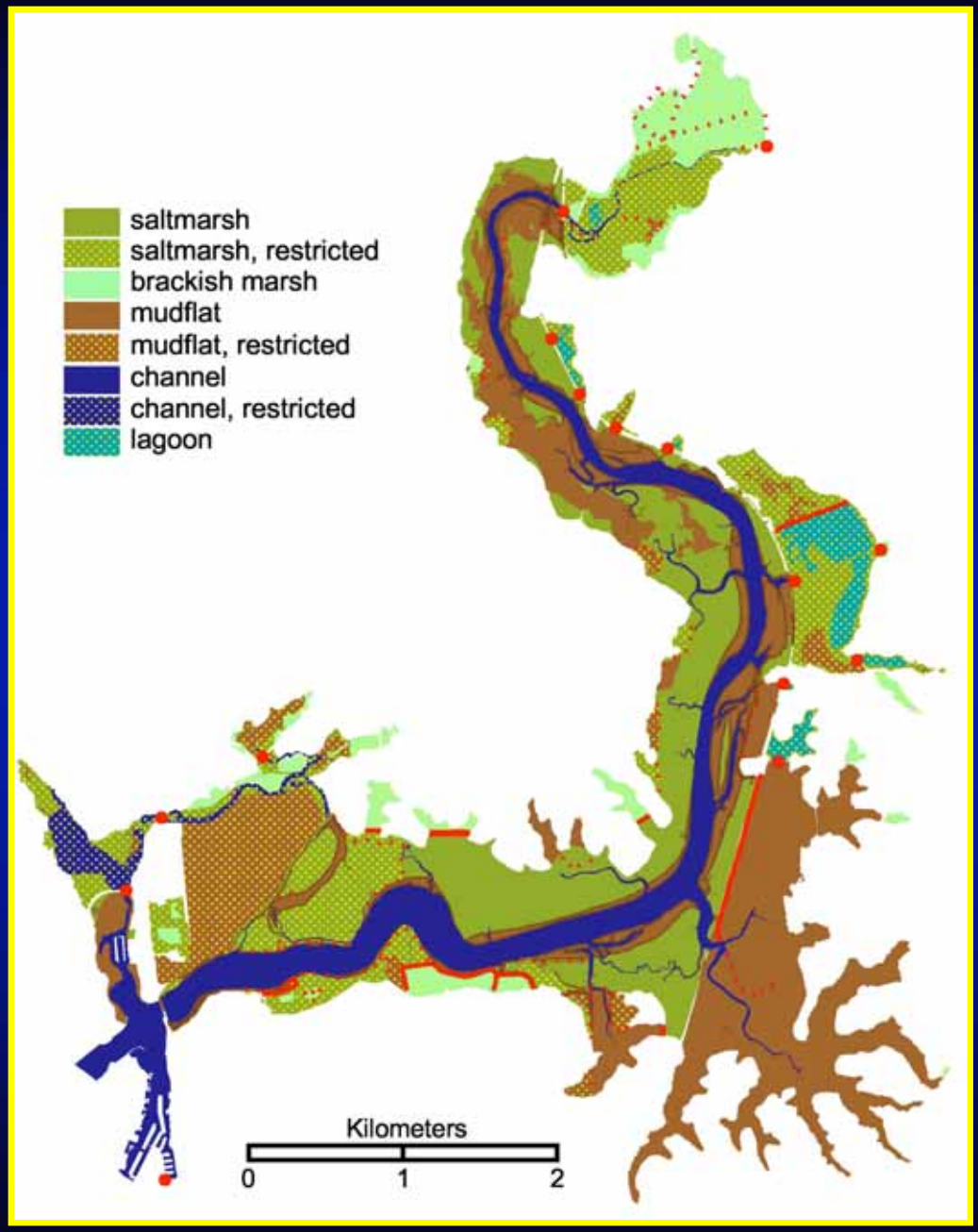
October 7, 2005
MBNMS Sanctuary Advisory Council

Elkhorn Slough

1. Tidal Habitats

2. Tidal Erosion / Marsh Loss

3. Tidal Wetland Plan



Elkhorn Slough Tidal Habitats

- Intertidal habitats (2800 acres)

Mudflat

Salt marsh

- Subtidal habitats (600 acres)

Channel/Tidal Creeks

Tidal Habitats - Value

2nd largest tract of CA tidal salt marsh

CA estuaries - habitat loss 75-90%

Critical habitat

- **550 marine invertebrate**
- **102 fish species**
- **100 species algae and phytoplankton**
- **135 water birds (Pacific Flyway)**
- **5 marine mammals**

Tidal Habitats - Value

The other “marine” mammals - kayakers, boaters, birdwatchers

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Marsh Loss

44% from 1931 - 2001

Channel Bank Erosion

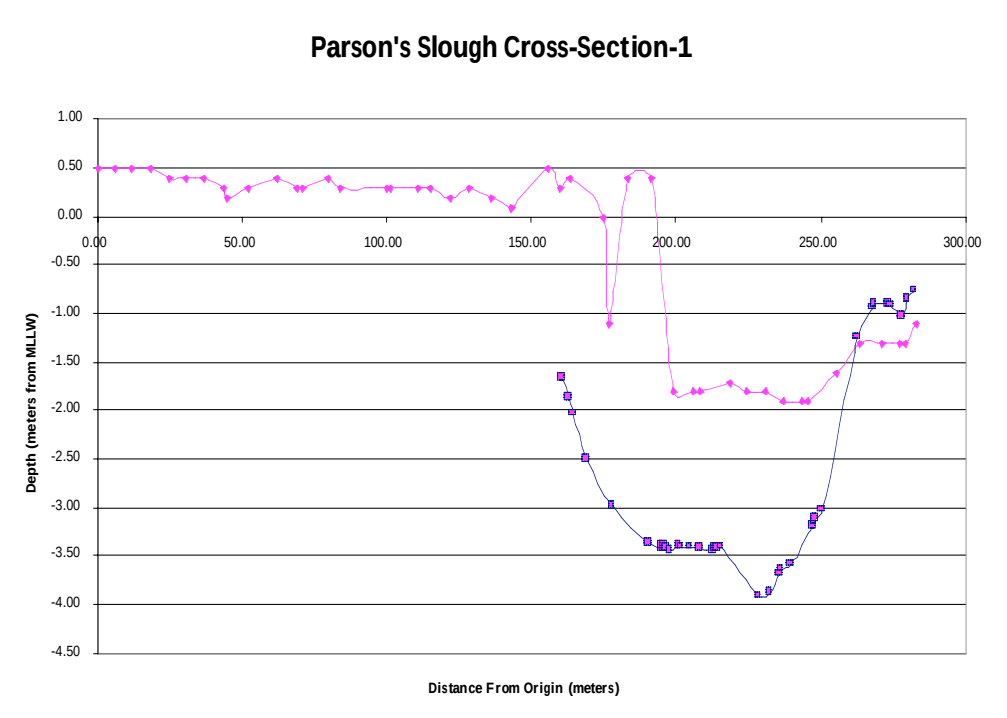
~ 1/2 meter per year

Tidal Creek Bank Erosion

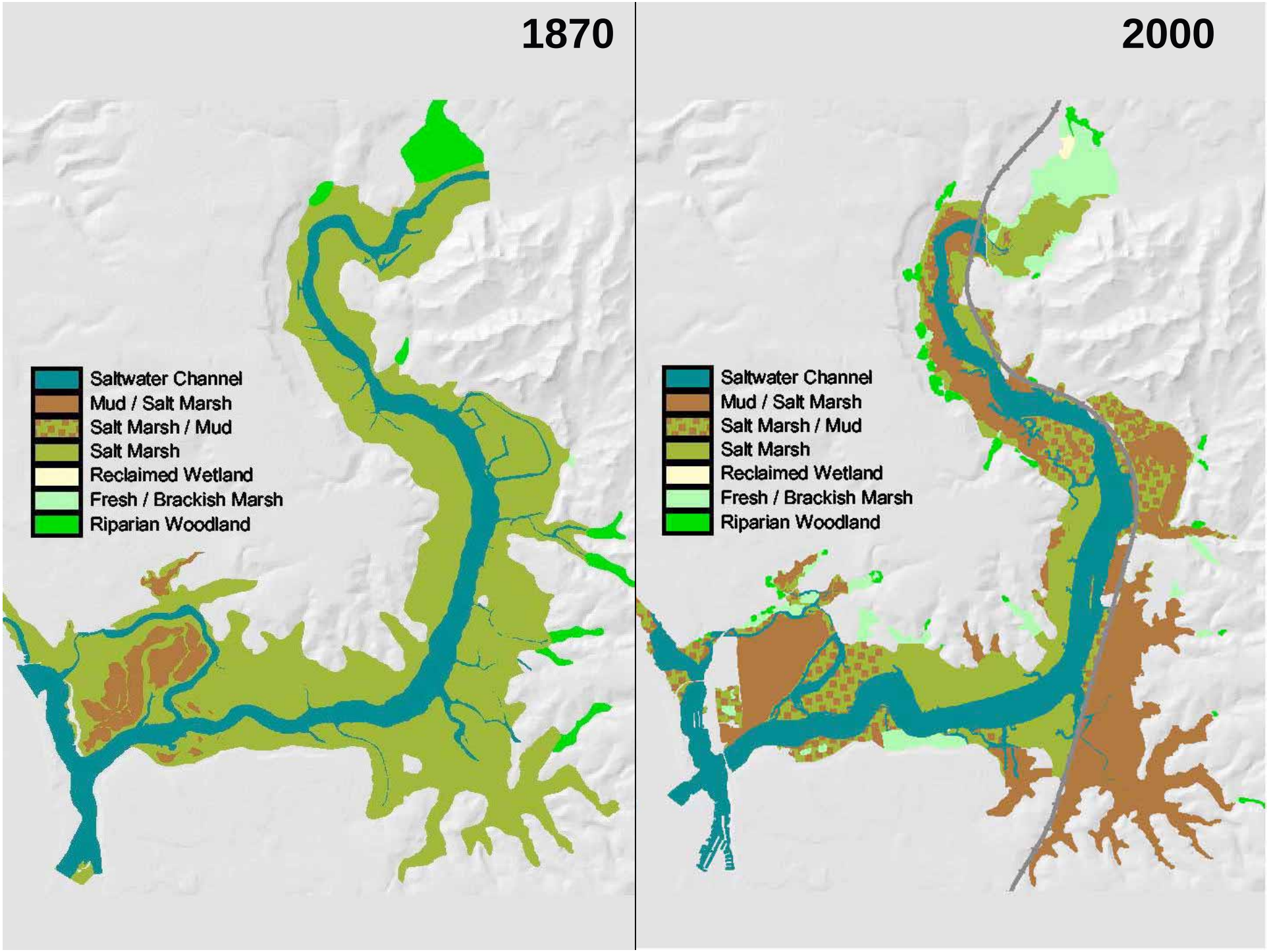
Average width increase 10 meters
from 1993 - 2001

Channel Erosion

24% increase from 1993 - 2001



73,000 cubic yards (1,971,000 cubic feet) sediment lost/yr


1870
2000
Saltwater Channel
Mud / Salt Marsh
Salt Marsh / Mud
Salt Marsh
Reclaimed Wetland
Fresh / Brackish Marsh
Riparian Woodland
Saltwater Channel
Mud / Salt Marsh
Salt Marsh / Mud
Salt Marsh
Reclaimed Wetland
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Riparian Woodland

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Elkhorn Slough
Tidal Wetland Plan (TWP)

What is it?

- Collaborative strategic planning process

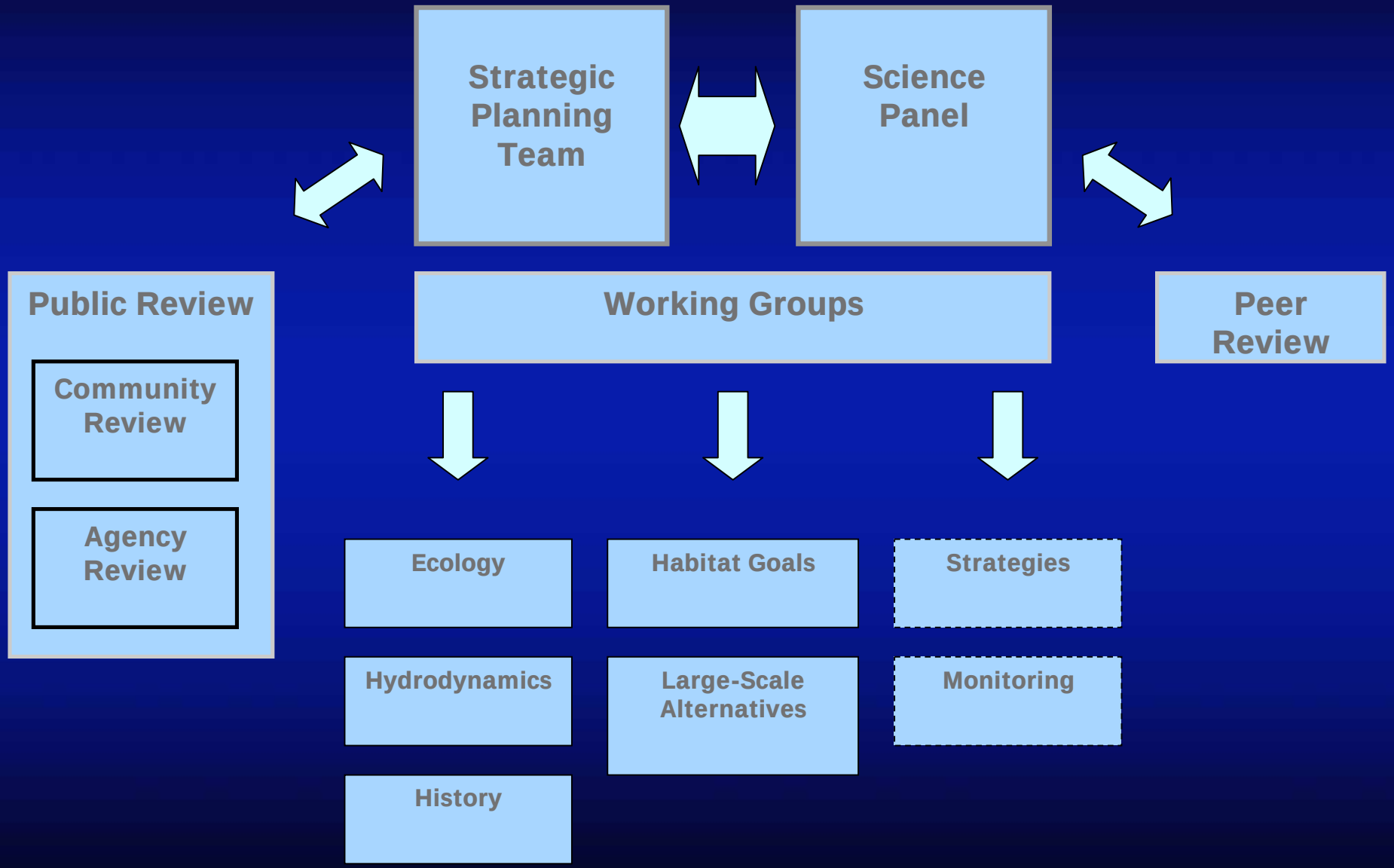
Purpose of Plan

- Develop strategies to address hydrological management issues
- To conserve, enhance, and restore tidal habitats in the Elkhorn Slough watershed

Funding / Management

- NOAA Coastal Impact Assistance Program
- CA Department of Fish and Game
- ES National Estuarine Research Reserve

ESTWP Participants and Roles



Strategic Planning Team

Role

Primary decision-making body overseeing the planning process

FEDERAL

- NOAA Elkhorn Slough National Estuarine Research Reserve (lead)*
- NOAA Monterey Bay National Marine Sanctuary
- NOAA National Marine Protected Areas
- U.S. Army Corps of Engineers
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service

STATE

- CA Coastal Commission
- CA Coastal Conservancy
- CA Department of Fish and Game

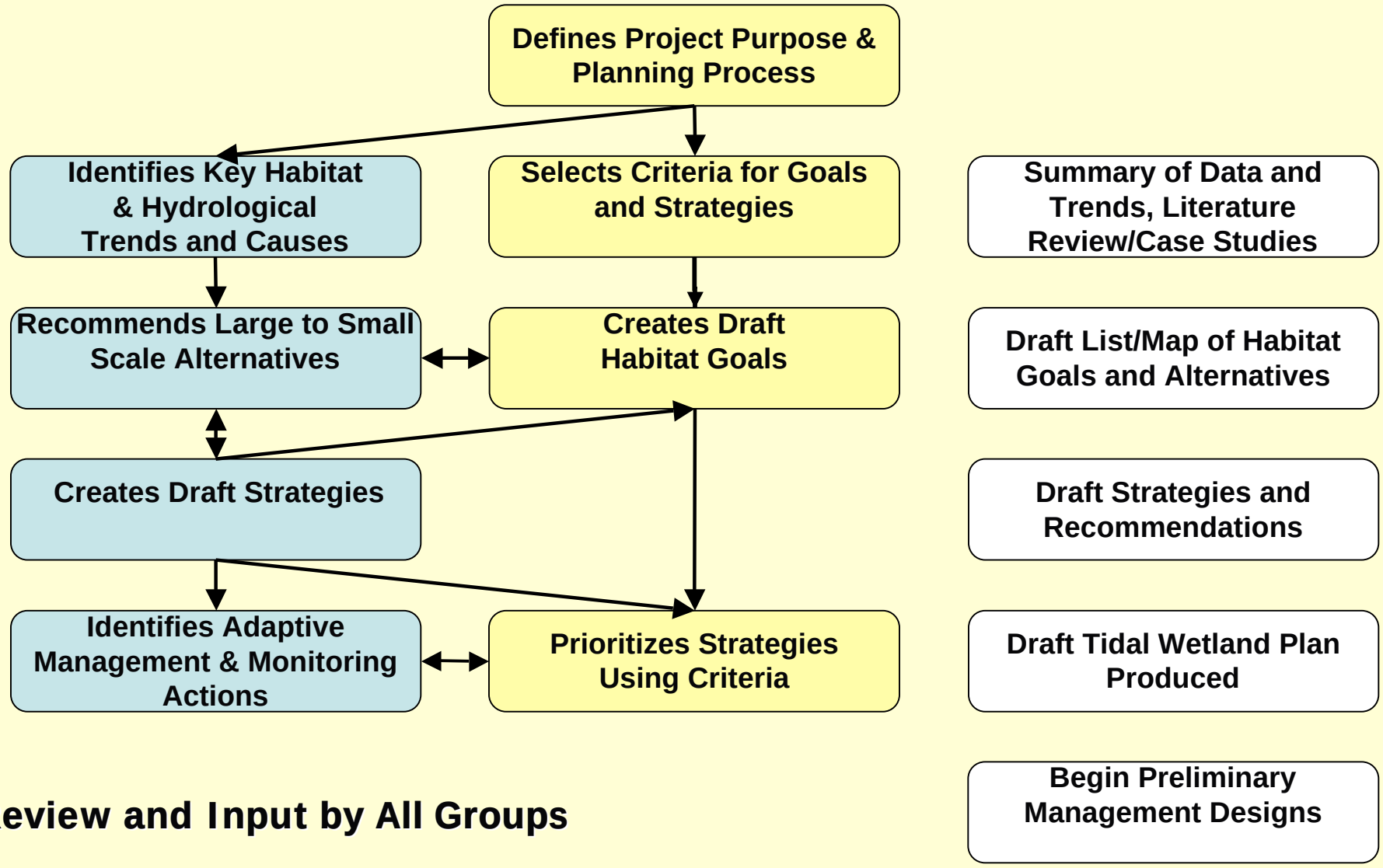
LOCAL

- Monterey County
- Moss Landing Harbor District

NONPROFIT/ACADEMIC

- CA State University Monterey Bay
- Elkhorn Slough Foundation
- San Francisco Estuary Institute
- The Nature Conservancy
- The Ocean Conservancy
- University of San Francisco

Draft Overview of Planning Process (April 2004 – June 2006)



*Review and Input by All Groups

VISION

"We envision a mosaic of estuarine communities of historic precedence that are sustained by natural tidal, fluvial, sedimentary, and biological processes in the Elkhorn Slough Watershed as a legacy for future generations."

GOALS

1. CONSERVE TIDAL HABITATS

- reduce tidal erosion and marsh loss

2. RESTORE AND ENHANCE TIDAL HABITATS

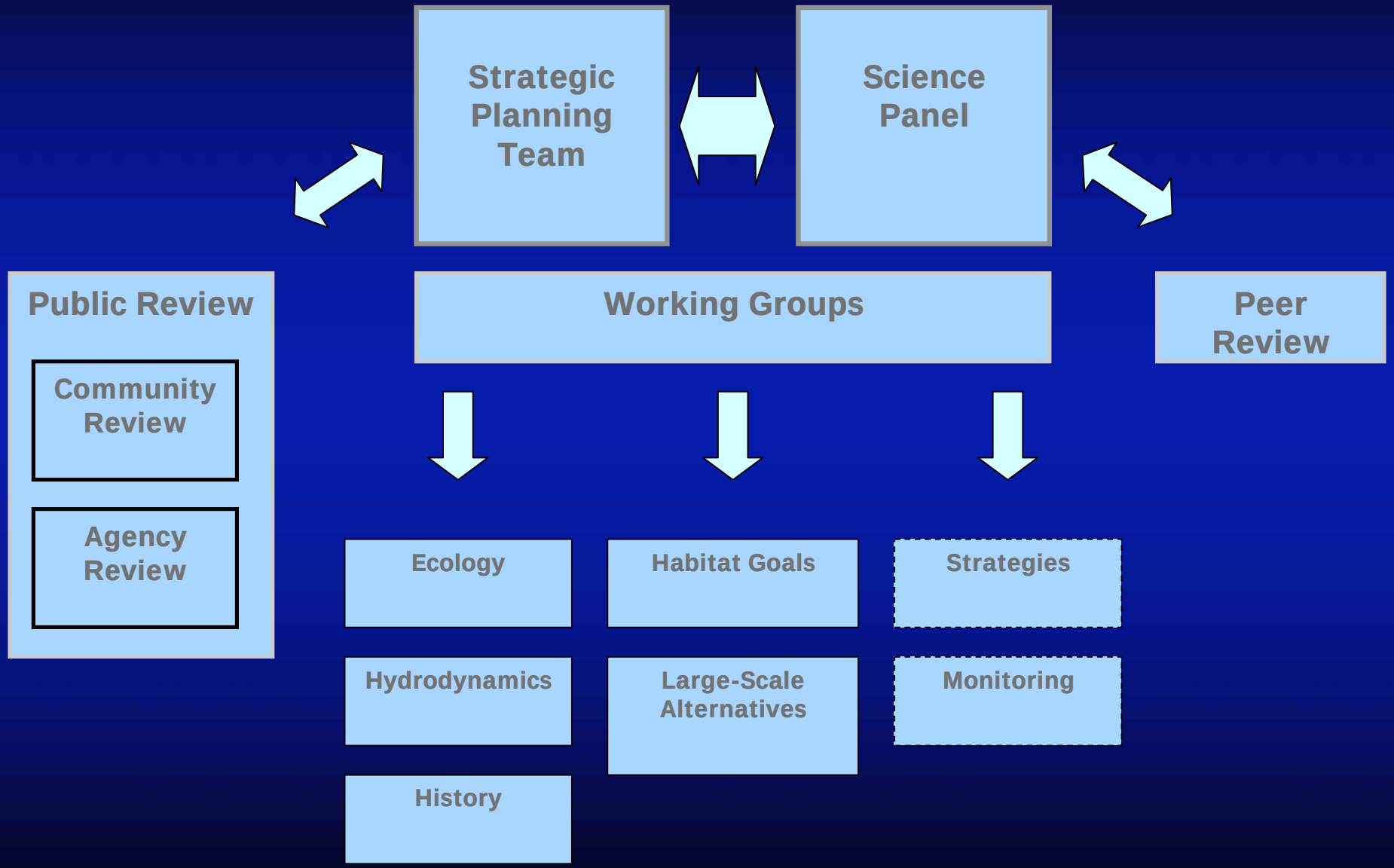
– increase salt marsh/tidal creek, tidal brackish, and quality of mudflat/subtidal habitats

3. RESTORE AND ENHANCE NATURAL PROCESSES – more stable system – reduce the tidal prism, restore tidal exchange, re-establish/augment suitable supply of sediments

Strategic Planning Principles (7/17)

- Consider the broadest range of possible approaches to achieve the goals and objectives.
- Accommodate boating, farming, transportation, recreation, and other human uses necessary to support people in the region.
- Incorporate the needs of estuarine-dependent species, state- and federally-listed species, migratory species, and formerly dominant species.
- Give priority to actions that focus on protecting estuarine habitats most rapidly being lost.
- Mitigate or avoid the negative impacts and consider the positive impacts of management strategies to neighboring landowners.
- Take into account present natural and cultural constraints and future geomorphological and climatic conditions in selecting restoration strategies.
- To the extent possible, find solutions that minimize the long-term cost of on-going maintenance.

ESTWP Participants and Roles



Science Panel and working groups

Role

- Provide and review scientific information for the Strategic Planning Team to make management decisions

Who

- Biology, hydrology, geology, tidal restoration, water chemistry

Over 40 members

U.S. Geological Survey
Stanford University
The Nature Conservancy
Moss Landing Marine Laboratories
U.S. Environmental Protection Agency
U.S. Army Corps of Engineers
University of California Santa Cruz
California Coastal Commission
Monterey Bay Aquarium Research Institute
California State University Monterey Bay
Resource Conservation District
Monterey Bay National Marine Sanctuary
Point Reyes Bird Observatory
ES National Estuarine Research Reserve
San Francisco State University

Characterize Key Tidal Habitats, Trends, and Causes

Past Conditions	1	Evolution of Elkhorn Slough and Associated Wetlands 17,000 years before present (ypb) to 1880 A.D.
	2	150 Years of Human Alterations and Tidal Habitat Change (1870-Present)
Past and Present Conditions	**3**	A Review of the Geology, Geomorphology, and Hydrodynamics
	4	Tidal Habitat Descriptions
Present Conditions	**5**	Groundwater Information
	6	Key Physical Processes Causing Tidal Erosion

Tidal Erosion / Marsh Loss

Causes

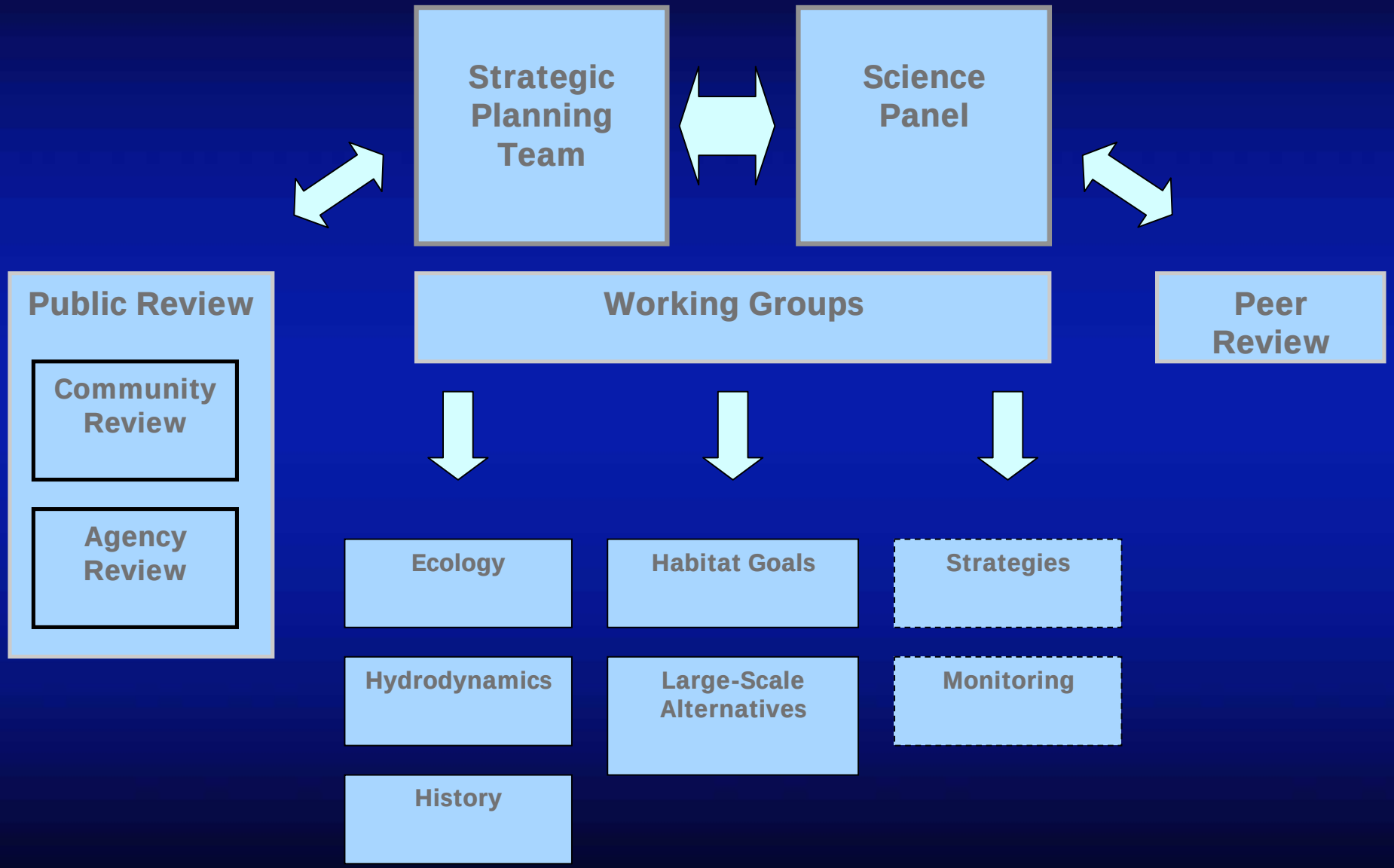
Decrease in sediment supply (Salinas River diversion), dike/levee failure and removal, Monterey Canyon, sea level rise, flooding due to subsidence and increased tidal range, biogeochemical processes

50-YEAR TRENDS

The relationship between the cross-sectional area and tidal prism in the Elkhorn Slough system is not at equilibrium. Therefore...

- Channel and tidal creek erosion will continue causing significant marsh and mudflat loss
- Sediments in soft-bottom areas will erode
- Salt marsh will continue to significantly decrease

ESTWP Participants and Roles



Community, Agency, and Peer Review

- **Community** – Representatives of key stakeholder groups and interested public
- **Agency** – Entities with jurisdictional or regulatory authority of tidal wetlands in the Elkhorn Slough watershed
- **Peer Review** – Scientists with tidal wetland expertise
- **Role –** Provide input to the Strategic Planning Team


“In our profession, a plan that everyone dislikes for different reasons is a success.
A plan everyone dislikes for the same reason is a failure.
And a plan that everyone likes for the same reason is an act of God.”
Richard Carson, Pacific Northwest planner and writer

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www.elkhornslough.org/tidalwetlandplan.htm